Top Level Mishaps (TLMs)
Unmanned Systems
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Custodial and Configuration Management Responsibilities For This Document Belong To: Frank Zalegowski, frank.zalegowski@navy.mil, 540.653.3018

TLMs

TLM-1 Unintended/Abnormal System Mobility Operation

TLM-2 Inadvertent Firing or Release of Weapons

TLM-3 Engagement of Unintended Targets

TLM-4 Self-Damage of Own System from Weapon Fire/Release

TLM-5 Personnel Injury

TLM-6 Equipment Damage

TLM-7 Environmental Damage

TLM-1 Unintended/Abnormal System Mobility Operation

- Definition
  - Movement of the UMS, or its components, where the movement is unexpected, un-commanded, inadvertent, unintended and/or abnormal
  - Results in personnel injury and/or equipment damage due to the movement
- Scope
  - Normal mobility operation at the wrong time
  - Abnormal mobility operation due to system faults
  - Continued self-operation after loss of ownership (i.e., control)
- Examples
  - Gun turret suddenly slews around hitting personnel
  - UMS moves without a command and runs over personnel
  - UMS lost from control range and its operation injures people in area

TLM-2 Inadvertent Firing or Release of Weapons

- Definition
  - The unintended firing or release of ordnance from the UMS
  - Results in personnel injury and equipment damage if ordnance initiates
  - Results in personnel injury if weapon is dropped on personnel
- Scope
  - Includes all weapons carried aboard the UMS
  - Includes scenarios where weapon Arm sequence has and has not been initiated
- Examples
  - Inadvertent missile launch
  - Inadvertent dropping of a bomb
  - Inadvertent firing of a gun or continued firing after stop command

TLM-3 Engagement of Unintended Targets

- Definition
  - The intended engagement of a target by the UMS, but the target is incorrect
  - Results in personnel injury and equipment damage
- Scope
  - Includes incorrect target identification
  - Includes incorrect target selection from several targets
  - Includes system errors causing firing into incorrect coordinates
- Examples
  - Incoming aircraft not correctly recognized as friendly
  - Situational awareness errors during engagement causes weapons to be fired/released into wrong target area

TLM-4 Self-Damage of Own System from Weapon Fire/Release

- Definition
  - Weapons fired from the UMS which strike the UMS structure
  - Weapons fired from the UMS which strike other weapons fired from the UMS
  - Also known as Fratricide
- Scope
  - Includes all UMS weapons and UMS super-structure
- Examples
  - Lack of or faulty cutouts in firing zone
  - Inadvertent weapons release

TLM-5 Personnel Injury

- Definition
  - Personnel injury that results from operation of the system
- Scope
  - Includes both normal and abnormal operation
  - Includes all operational modes, such as operation, test, maintenance, transportation, handling, etc.
- Examples
  - Personnel injury from toxic/hazardous chemicals
  - Personnel injury from damaging levels of radiation
  - Personnel injury from electrical voltage

TLM-6 Equipment Damage

- Definition
  - Equipment damage that results from operation of the system
- Scope
  - Includes both normal and abnormal operation
  - Includes all operational modes, such as operation, test, maintenance, transportation, handling, etc.
- Examples
  - Equipment damage from toxic chemicals
  - Equipment damage from electromagnetic radiation (e.g., fire)
  - Equipment damage from electrical faults

TLM-7 Environmental Damage

- Definition
  - Damage to the environment that results from the UMS system
- Scope
  - Includes both normal and abnormal operation
  - Includes all operational modes, such as operation, test, maintenance, transportation, handling, etc.
  - Includes UMS de-mil
- Examples
  - Damage from toxic/hazardous chemicals
  - Damage from Haz Mat used in the system